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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,946	09/26/2003	Takuya Matsumoto	8305-233US (61-0002-1)	9416

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ONE COMMERCE SQUARE
2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103

EXAMINER

BERNSHTEYN, MICHAEL

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,946

Applicant(s)

MATSUMOTO ET AL.

Examiner

Michael Bernshteyn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 07/13/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

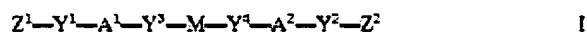
DETAILED ACTION

1. This Office Action follows a response filed on July 13, 2006. No new claims were added or amended. Claims 1-12 are pending.
2. Applicant's arguments, see remarks, filed July 13, 2006, and Declaration under 37 C.F.R § 1.132 with respect to the rejection(s) of claim(s) 1-12 under 35 U.S.C. §103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Meyer et al. (U.S. Patent 6,136,225) and Kawakami et al. (JP 08-020641 and JP 06-308462).

Claim Rejections - 35 USC § 103

3. The test of this section of Title 35, U.S.C. not included in this action can be found in a prior Office Action.
4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer et al. (U.S. Patent 6,136,225) in view of Kawakami et al. (JP 08-020641 and JP 06-308462).

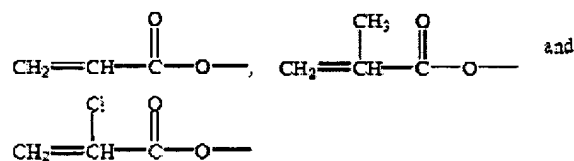
With regard to the limitations of claims 1-6, Meyer discloses polymerizable liquid –crystalline compounds of the formula 1:



where Z^1 and Z^2 are radicals containing reactive groups via which polymerization can be effected, Y^1 - Y^4 re a single chemical bond, oxygen, sulfur, a single covalent bond, -O-CO-, -CO-O-, -O-CO-O-, etc.; A^1 and A^2 are spacers having 2 to 30 carbon atoms

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in which the carbon chain may be interrupted by ether oxygen, thioether sulfur or by imino or C₁-C₄-alkylimino groups, M is a mesogenic group and R is C₁-C₄ alkyl (abstract). Meyer discloses that preferred polymerizable groups Z¹ and Z² are those, which are susceptible to free radical polymerization, i.e. in particular olefinically unsaturated groups and of these **acrylic groups** are of particular importance in combination with Y¹ and Y² (col. 3, lines 5-18).



The above definition of Y¹ and Y² fully corresponds to -CO-O- in instant claim 1; the definition of A¹ and A² fully corresponds to (CH₂)_n and (CH₂)_m; M is the same mesogenic group because P₁, P₂ and P₃ are aromatic moieties (col. 4 - col. 10); Y³ and Y⁴ fully correspond to L₁ - L₂.

Meyer discloses that Z¹ and Z² are independently selected from the groups including **acrylic group** (col. 3, line 13) and epoxy group (col. 54, lines 4-7). Meyer clearly exemplifies the acrylic groups in the Examples 1-49 (col. 27, line 20 through col. 41, line 53).

Meyer discloses that it is possible by polymerizing the novel compounds or liquid-crystal compositions to fix the liquid-crystalline ordered state. The polymerization can take place, for example, thermally or photochemically depending on the polymerizable group. It is also possible to copolymerize other monomers with the novel compounds or liquid-crystal compositions. These monomers can be other conventional crosslinkers

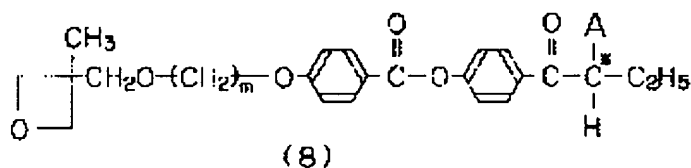
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such as polyvalent acrylates, vinyl compounds or epoxides (col. 21, lines 54-64). This type of polymerization would result in pendant chains after the ethylenic unsaturation of all the monomers are used to polymerize them.

Meyer discloses that novel liquid crystal compositions contain 10-100% by weight...of compounds I, I and II and/or III, in each case based on the total weight of the liquid crystal composition. In addition, the mixtures may contain 0-90% by weight, preferably 0-50% by weight, of other monomers like the crosslinkers described hereinafter, and 0-50% by weight, preferably 0-10% of one or more polymerizable or nonpolymerizable chiral compounds (col. 21, lines 48-53).

Meyer does not disclose the specific use of oxetane group.

Kawasaki discloses that for high-molecular liquid crystal with the main chain consisting of polyoxetane, which is analog for the instant claim 2, the number-average molecular weight is preferably 1000-1,000,000 (JP 08-020641, abstract) and the area ratio of A (a monodisperse ratio): B (a non-monodisperse ratio) is 10:0 to 9:1 (JP'462, abstract and page 4, [0018]).



Both references are analogous art because they are from the same field of endeavor concerning new polymerizable liquid-crystalline compounds.

Therefore, it would have been obvious to one of ordinary skills in the art the invention was made to incorporate oxetanyl functional group as one of Z group in

formula 1 with molecular weight from 2,000 to 1,000,000 and the amount of 10 percent by mass of side-chain type liquid crystalline polymer to a liquid crystal material as taught by Kawakami in Meyer's polymeric liquid-crystalline compositions in order to obtain a high molecular liquid crystal with the main chain consisting of polyoxetane, having specific recurring units, exhibiting high response rate to electric field change even at elevated temperatures, excellent in display characteristics for wide screens or curved screens, thus useful for electro-optical devices (JP'641, abstract), and thus to arrive to arrive at the subject matter of instant claim 1 and dependable claims 2-6.

With regard to the limitations of claim 7, Meyer does not disclose the use of photo cationic initiator for the process of polymerization.

Kawakami discloses that the obtained monomer (8) has cationic polymerization nature and can be made using a cationic polymerization catalyst (JP'642, page 4, [0020] and page 5, [0023]).

Therefore, it would have been obvious to one of ordinary skills in the art the invention was made to incorporate cationic initiator as taught by Kawakami for the polymerization process of for the preparation of Meyer and Kawakami's polymeric liquid-crystalline compositions because the above mentioned monomer with oxetanyl functional group has cationic polymerization nature (JP'641, [0020]), and thus to arrive to arrive at the subject matter of instant claim 7.

With regard to the limitations of claims 8-12, Meyer discloses that numerous compounds are not converted directly into the liquid, unordered state on warming from the crystalline state with a defined close and long distance ordering of the molecules,

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but instead pass through a liquid crystalline phase, in which, although the molecules are mobile, the molecule axes form an **ordered structure**. Elongate molecules frequently form **nematic liquid-crystalline phases**, which are characterized by **an alignment long-distance ordering** owing to parallel arrangement of the long axes of the molecules. If a nematic phase of this type contains chiral compounds, a so-called **cholesteric phase** forms, which is characterized by a helical superstructure of the long axes of the molecules. The chiral compound here can be the liquid-crystalline compound itself or it can be added to a nematic liquid-crystalline phase as a chiral dope. Liquid-crystalline materials have remarkable **optical properties** based on their **anisotropic ordered state** (col. 1, lines 41-57).

The liquid-crystal compositions are outstandingly suitable for coating surfaces. A process for the production of such coatings having a liquid-crystalline ordered state comprises diluting the liquid-crystal compositions, which may comprise further polymerizable compounds and chiral compounds, if desired with a diluent to reduce the viscosity, applying the mixture to a substrate, effecting a liquid-crystalline alignment and then polymerizing the compounds applied to the substrate. The liquid-crystalline alignment is formed either spontaneously during application or is achieved by known physical methods, for example rubbing or application of an electric or magnetic field (col. 26, lines 6-18).

In the absence of showing the criticality, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the orientation state (anisotropic) state of liquid crystal material which contains different groups

(phases) of orientation, followed by fixing the orientation by light irradiation and/or heat treatment for producing liquid crystal optical film from Meyer and Kawakami's polymerizable liquid-crystalline compounds in order to obtain the desired remarkable **optical properties** based on their **anisotropic ordered state** (US'225, col. 1 lines 41-57).

Other limitations of monomer content and optical film application are either disclosed or rendered *prima facie* obvious by combines teaching of Meyer and Kawakami.

Therefore, all the claims are rendered *prima facie* obvious under 35 U.S.C. 103 from the references cited.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b)

5. Claims 1-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 10/852,557. Although the conflicting claims are not identical, they are not patentably distinct from each other because the conflicting claim 1 recites the same compound of formula (1) with exactly the same substituents like the claim 1 in copending application; claim 3 recites the same polymerizable compound of formula (8) with exactly the same substituents like the claim 2 in copending application, and all over claims 2 and 4-12 contain analogous limitations like the claims 3-10 of copending application 10/825,557.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Applicant has provided evidence in this file showing that the invention was owned by, or subject to an obligation of assignment to, the same entity as copending application 10/825,557 at the time this invention was made, or was subject to a joint research agreement at the time this invention was made. However, reference 10/825,557 additionally qualifies as prior art under another subsection of 35 U.S.C. 102, and therefore, is not disqualified as prior art under 35 U.S.C. 103(c).

Applicant may overcome the applied art either by a showing under 37 CFR 1.132 that the invention disclosed therein was derived from the invention of this application,

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and is therefore, not the invention "by another," or by antedating the applied art under 37 CFR 1.131.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn
Patent Examiner
Art Unit 1713

MB
09/14/2006


LING-SUI CHOI
PRIMARY EXAMINER